

This service summarizes current satellite mapping activities of interest to GDACS stakeholders. It is issued weekly and based on contributions from map-producing entities and GDACS partners.

Satellite mapping overview

As of 26 October 2015

Africa

Central African Republic complex emergency – GLIDE number: CE20131212CAF

The Central African Republic capital of Bangui experienced an outbreak of violence in December 2013 that left almost half of the city's population displaced. UNITAR-UNOSAT has monitored the evolution of this situation and recently released an updated map of an IDP settlement within Bangui's M'Poko International Airport. Using satellite imagery acquired 04 October 2015, UNITAR-UNOSAT identified a total of approximately 2,578 tent shelters and 148 administrative structures. This represents a decrease of 19.3% in the number of detected shelters since the previous UNITAR-UNOSAT analysis of 06 June 2014 satellite imagery. This map product is available for download as a PDF on the UNITAR-UNOSAT website. Accompanying data in ESRI shapefile and geodatabase format is also accessible through UNITAR-UNOSAT's product links.

Source: UNITAR-UNOSAT

Link: <http://www.unitar.org/unosat/maps/RCA>

South Sudan complex emergency – GLIDE number: OT-2014-000001-SSD

As a result of escalating violence in South Sudan during the month of December 2013, over 30,000 civilians sought refuge in United Nations facilities. UNITAR-UNOSAT recently produced a map of an IDP camp at the UNMISS Malakal Base in Malakal, South Sudan. Analysis of satellite imagery acquired 26 September 2015 revealed an increase in the camp's extent from the previous UNITAR-UNOSAT analysis of 21 April 2014 imagery. A total of approximately 7,791 shelters and 536 infrastructural buildings were detected within the UNMISS Malakal Base as of 26 September 2015. An increase in additional shelters outside of the UNMISS grounds was also observed. This map product is available for download as a PDF on the UNITAR-UNOSAT website. Accompanying data in ESRI shapefile and geodatabase format is also accessible on the website.

Source: UNITAR-UNOSAT

Link: <http://www.unitar.org/unosat/maps/SSD>

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Asia

Indonesia fires – GLIDE number: TBD

In late September 2015, Indonesia experienced uncontrollable fires caused by slash and burn agriculture, and exacerbated by large peat deposits. Vast expanses of smoke drifting over the country led to air quality alerts and health warnings in Indonesia and its neighboring countries. The NASA Earth Observatory acquired 19 October 2015 satellite imagery of the situation and produced an overview map. At this time, smoke plumes were visible engulfing a large portion of southeast Borneo and more than one hundred actively burning fires were detected. It is estimated that fires in Indonesia have emitted 1.1 billion tons of carbon dioxide equivalents so far in 2015. This figure is larger than average annual carbon emissions in Germany. Scientists anticipate that the fires will continue to burn until the arrival of monsoon rains at the end of October 2015. Nonetheless, there remains concern of an extended dry season due to El Niño's effects in the Pacific Ocean. This map product is available for online viewing and download in JPEG format on the NASA Earth Observatory website.

Source: NASA Earth Observatory

Link: <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=86847&eocn=home&eoci=nh>

Myanmar floods – GLIDE number: FL-2015-000089-MMR

Torrential rainfall at the onset of the monsoon season caused severe flooding in several parts of Myanmar. The western regions of Chin, Magway, Sagaing and Rakhine were declared disaster zones by the government. UNITAR-UNOSAT began work for this event on 13 July 2015 and triggered the International Charter on Space and Major Disasters on 05 August 2015 on behalf of the UNDP Myanmar. In an effort to monitor the situation, UNITAR-UNOSAT recently published an update on the status of a landslide induced dam in Tonzang township. Analysis of satellite imagery acquired 17 October 2015 revealed 54 hectares of land covered by water in the affected area. This represents an increase of 59% since the last UNITAR-UNOSAT analysis of 16 September 2015 satellite imagery. This map product is available for download as a PDF on the UNITAR-UNOSAT website. Accompanying data in ESRI shapefile and geodatabase format is also accessible there.

Source: UNITAR-UNOSAT

Link: <http://www.unitar.org/unosat/maps/MMR>

Philippines typhoon – GLIDE number: TC-2015-000143PHL

On 18 October 2015 Typhoon Koppu made landfall over the island of Luzon in the northern Philippines. Designated a Category 4 storm at the time, Koppu brought heavy rainfall and strong winds of up to 240 kilometers per hour. The NASA Earth Observatory and the Copernicus Emergency Management Service recently released maps of the typhoon and its aftermath. Satellite imagery

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collected by the NASA Earth Observatory on 19 October 2015 shows the typhoon as a Category 1 storm hovering over the South China Sea, with its extremities covering most of Luzon and part of southern Taiwan. By the evening of 19 October 2015, Koppu had been downgraded to a tropical storm. Another map produced by the NASA Earth Observatory with 21 October 2015 satellite imagery illustrates flooding along the Pampanga River and discolored, muddy runoff in Manila Bay. Analysis of 22 October 2015 satellite imagery by the Copernicus Emergency Management Service also revealed 2,037 hectares of flooded area in the city of Dagupan. Map products are available for online viewing and download in various formats on the NASA Earth Observatory and Copernicus Emergency Management Service websites.

Sources: NASA Earth Observatory, Copernicus Emergency Management Service

Links: <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=86844&eocn=home&eoci=nh>
<http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=86857&eocn=home&eoci=nh>
<http://emergency.copernicus.eu/mapping/list-of-components/EMSR143>

Europe

Croatia floods – GLIDE number: EMSR142*

Due to substantial rainfall on 15 October 2015, the Karlovac area of Croatia experienced floods. In an effort to aid Croatia's Civil Protection Center, the Copernicus Emergency Management Service published new maps of the situation in Sisak and Bobovac. Analysis of satellite imagery acquired 21 October 2015 revealed a flooded area of approximately 1,650 hectares in Sisak and 4,090 hectares in Bobovac. Roughly 769 inhabitants, 13.7 hectares of settlements and 2.8 kilometers of primary and secondary roads were impacted by the floods in Sisak. In Bobovac, 426 inhabitants, 9 hectares of settlements, and 0.1 kilometers of secondary roads were affected. Map products are available for download in TIFF, PDF, and JPEG formats on the Copernicus Emergency Management Service website. Accompanying zipped vector packages are also provided on the website.

Source: Copernicus Emergency Management Service

Link: <http://emergency.copernicus.eu/mapping/list-of-components/EMSR142>

Italy floods – GLIDE number: EMSR141*

On 14 October 2015, heavy rainfall caused severe floods and landslides in the Benevento and Caserta provinces of Italy. In support of the Italian Civil Protection Department, the Copernicus Emergency Management Service released a new map of flood waters in the commune of Castel Volturno. Using satellite imagery from 17 and 24 October 2015, Copernicus identified 138 hectares of flood affected land. Most of the flooded area was detected on 17 October 2015, with only 2.5 additional hectares observed as of 24 October 2015. Fortunately, the recent flooding did not impact

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any residents, settlements, or transportation networks. This map product is available for download in TIFF, PDF, and JPEG formats on the Copernicus Emergency Management Service website. An accompanying zipped vector package is also provided there.

Source: Copernicus Emergency Management Service

Link: <http://emergency.copernicus.eu/mapping/list-of-components/EMSR141>

North America

Mexico hurricane – GLIDE number: TC-2015-000144-MEX

The strongest hurricane on record in the Americas made landfall over Jalisco state in western Mexico on 23 October 2015. Hurricane Patricia was a Category 5 storm at the time and had winds of up to 325 kilometers per hour. The NASA Earth Observatory and the Copernicus Emergency Management Service recently produced maps of the hurricane and its aftermath. Satellite imagery collected by the NASA Earth Observatory on 23 October 2015 shows Patricia drifting over the eastern Pacific Ocean and western Mexico. At this time, the hurricane was a Category 5 storm with its center approximately 140 kilometers southwest of Manzanillo. The Copernicus Emergency Management Service analyzed 25 October 2015 satellite imagery over Manzanillo and identified a total flooded area of 1,237.6 hectares. Additionally, 36 inhabitants, 1.7 hectares of settlements, and 0.1 kilometers of secondary roads were affected. The hurricane quickly weakened to a tropical storm after making contact with the Sierra Madre Occidental mountain range, and its remnants have since brought heavy rains to Texas as well as other parts of the Gulf of Mexico. Map products are available for online viewing and download in various formats on the NASA Earth Observatory and Copernicus Emergency Management Service websites.

Sources: NASA Earth Observatory, Copernicus Emergency Management Service

Links: <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=86882&eocn=home&eoci=nh>

<http://emergency.copernicus.eu/mapping/list-of-components/EMSR144>

Pacific Ocean hurricane – GLIDE number: TBD

Hurricane Olaf formed over the Pacific Ocean in late October 2015 and became the Northern Hemisphere's 21st hurricane of Category 4 or 5 strength this year. According to meteorologists, this increased activity in the Pacific basin is attributable to El Niño, which has reduced wind shear and thus made it easier for storms to occur. The NASA Earth Observatory captured satellite imagery of Olaf on 19 October 2015 and produced an overview map. As of this date, the hurricane was visible hovering over a large area in the Pacific Ocean. Although it was a Category 2 storm at the time, with maximum sustained winds of 157 kilometers per hour, twelve hours later Olaf grew into a Category 4 storm. As of 26 October 2015, Olaf had weakened to a tropical storm located several hundred

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miles east of the Big Island of Hawaii. This map product is available for online viewing and download in JPEG format on the NASA Earth Observatory website.

Source: NASA Earth Observatory

Link: <http://earthobservatory.nasa.gov/NaturalHazards/view.php?id=86851&eocn=home&eoci=nh>

This summary is compiled by the GDACS mapping & satellite imagery coordination mechanism, operated by the UNITAR Operational Satellite Applications Programme (UNOSAT).

When referring to this summary, please credit: GDACS, UNITAR-UNOSAT.

For comments, questions and to submit information on satellite image derived products, please contact: maps@gdacs.org

Sources indicate satellite analysis production entities and imagery providers. The products referenced in this summary are based on remote satellite imagery and may not be validated in the field prior to release, in which case findings are based only on what is observed in the satellite imagery.

**Not an official GLIDE number, as event has no entry in GLIDE database, but used by GDACS for seamless information integration.*